

Dividing Time Between Work and Study: Are Tuition Fees a Factor?

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ABSTRACT

This article examines whether rising tuition fees for post-secondary education are a contributing factor in students' labour market decisions. When labour market decisions for total number of working hours and for participation were measured, the results suggested that concerns about increased tuition fees leading to more work and compromising academic studies were unwarranted. The tuition fee effect was highly seasonal in nature. When tuition fees increased, students devoted more hours and participated more in labour market activities, but they did so only during the summer period, a time when most students are typically not involved in study activities.

RÉSUMÉ

Dans cet article, les auteurs examinent comment les facteurs d'augmenter ou de maintenir les frais de scolarité, au niveau des études post-secondaires, peuvent influencer les étudiants et leurs décisions en ce qui concerne le marché du travail. Elles ont mesuré les décisions des étudiants en considérant toutes les heures travaillées ainsi que le taux de participation. Les résultats indiquent qu'une augmentation de frais de scolarité ne mène ni à plus d'heures travaillées ni à plus d'études académiques compromises. L'effet des frais de scolarité est très saisonnier. Lorsqu'il y a une augmentation de frais de scolarité, les étudiants travaillent plus d'heures et participent plus dans le marché du travail, mais ceci uniquement pendant la période d'été lorsqu'ils ne sont pas impliqués aux études.

INTRODUCTION

The debate over the appropriateness of tuition fee policy for post-secondary education has always drawn a great deal of attention. Studies such as Usher (2006), Junor and Usher (2007), and Finne, Usher, and Vossensteyn (2004) have examined not only the changes in Canadian university tuition fee policy in recent decades but also the relationship between tuition fees and Canada's student financial aid system. Intensive research has also been done on the impact of tuition fees on enrolment decisions; results from Canadian research have been quite mixed in terms of this issue. While Christofides, Cirello, and Hoy (2001) and Rivard and Raymond (2004) found no evidence of a tuition fee effect on post-secondary attendance, Coeli (2005), Neill (2005), Johnson and Rahman (2005), and Christofides, Hoy, and Yang (2008) reported a negative effect.

The goal of our study was to analyze whether tuition expenses played a determining role in university students' labour market decisions. Only a few studies have investigated the potential relationship between tuition fees and students' labour market decisions. For example, Neill (2006) pointed out that an increase in the labour force participation rate among full-time university students can be attributed to higher tuition fees. If students are able to increase their earned income during the semester, they may be able to mitigate the effects of fee increases on their enrolment decision.

Data collected from Statistics Canada's Youth in Transition Survey (YITS) allowed us to incorporate some novel features into our analysis. First, compared with other studies, we were able to derive more accurate tuition fee measures for each observation. YITS has detailed information on the university attended, the major field of study, and the monthly study status of each student surveyed, and we used this information to construct accurate tuition fee data for each individual. Second, as observed in prior studies, a student's labour market activity has a significantly seasonal pattern. Due to data limitations, however, few studies have been able to address this issue. By using YITS information in conjunction with individual students' monthly labour market status, we were able to separate study (in-school) periods from non-study periods, such as the summer. When summer periods were excluded from our analysis, we noted a significant difference in our results. Similar to Neill (2006),¹ we found that an increase in tuition fees increased students' labour force participation, as well as hours worked, although this effect disappeared when we excluded summer periods. Students were inclined to choose more summer work to make up for any tuition fee shortfall.

A brief review of the literature is provided next. Following this review, we explain the data we used and define the dependent variables, describe the explanatory variables and discuss our estimation results, and, finally, present our conclusions.

LITERATURE REVIEW

A student's decision to work while attending school has both pros and cons. On the positive side, the experience gained from working may have an impact on an individual's future earning ability. There is a rich literature on the economic returns to in-school work experience. Light (2001) tested the effect of working while in school on postgraduate wages by using a male subsample of the U.S. National Longitudinal Survey of Youth (NLSY); her study revealed that in-school working experience was positively related to postgraduation wages. However, Hotz, Xu, Tienda, and Ahituv's (2002) follow-up study using the same NLSY data set found that the estimated returns to working while in high school or college were dramatically diminished in magnitude and statistical significance when dynamic selection methods were used to control for unobserved heterogeneity and selectivity. Häkkinen (2004) used Statistics Finland's Employment Statistics to study the influence of working while attending university on postgraduate job accessibility and wage levels and found that student employment had only a short-term or insignificant influence on later labour market success. In the Canadian literature, Parent (2006) used Statistics Canada's 1991 School Leavers Survey and its 1995 follow-up survey to examine the consequences of working while in high school. Parent's results showed a strong negative effect on graduation rates for males and a relatively ambiguous effect for females; additionally, working experience accumulated during high school may not contribute to future labour market achievement, as reflected in wage levels.

On the negative side, as evidenced by past studies, working while in school may have a negative impact on a student's academic performance. Devadoss and Foltz (1996) investigated the factors that might influence a university student's class performance and attendance; they concluded that hours worked during the school year on jobs outside of class have a negative impact on both class attendance and student performance. Several other studies have investigated the relationship between employment and school performance for high school students,² and although the results vary from study to study, the data suggested that students who made a heavy commitment to jobs outside of class experienced negative outcomes, including lower grade-point averages.

To account for the short- and long-run costs and benefits of the work and study decisions discussed above, a few studies (Keane, 2002; Keane & Wolpin, 2001; Neill, 2006) attempted to use intertemporal models with borrowing constraints to explain the outcomes. These models argue that an increase in tuition fees reduces lifetime income, which affects the optimal allocation of time between leisure and income-generating activities among students. When borrowing constraints bind, individuals will increase their hours worked; with no borrowing constraints, increases in tuition fees have little effect on students' leisure choices and overall consumption levels.

This result, drawn from intertemporal models, highlights the importance of studying the empirical relationship between tuition fees, credit constraints, and

labour market activities. Studies such as Cameron and Heckman (1999, 2001), Carneiro and Heckman (2002), and Frenette (2007) suggested there was little evidence of credit market failure in the financing of post-secondary education. Because family income does not play a direct role in college attendance, students from low-income families are not compromised by financial issues. If it is relatively easy to borrow, students should be able to finance a tuition fee increase through the credit market, with little change expected in their labour market behaviour. This is especially true if increasing tuition costs are more easily accommodated by increasing hours of work after graduation, rather than during schooling, given the likelihood of higher wages being earned after graduation. A positive effect of a tuition fee increase on labour market participation or hours worked could indicate credit market imperfections, at least for certain groups of students.

As suggested by Keane and Wolpin (2001), although credit constraints may not have much effect on the enrolment decision of youth, these constraints may have an important impact on their decision to work. Neill (2006) demonstrated that the estimated effect of a tuition fee increase was surprisingly large, accounting for nearly half of the increase in the percentage of students working over the past decade. Since students have fewer hours to work and generally earn lower wages, an increase in tuition fees likely leads to a combination of extra working hours, increased borrowing, and reduced consumption.

YITS DATA AND THE DEPENDENT VARIABLE

The data used in our study come from Statistics Canada's Youth in Transition Survey (YITS), a longitudinal survey that was designed to provide policy-relevant information about school/work transitions and factors influencing pathways between education, training, and employment.³ Between January and April 2000, Statistics Canada, with the co-operation and support of Human Resources Development Canada, collected the survey's first data set, known as cycle 1. YITS had two cohorts: cohort A was composed of youth who were 15 years old when the survey was first conducted in 2000; cohort B consisted of a sample of 18 to 20 year olds at that time. Cohort B was the only cohort examined in our study. In 2002 (cycle 2) and 2004 (cycle 3), survey participants were re-interviewed to follow up on their work-study behaviour during each period since they were last interviewed. The sample size shrank significantly in cycle 2 and cycle 3: from 22,378 observations in cycle 1 to 18,779 in cycle 2 and 14,817 in cycle 3. YITS collected working and studying status for every year from 1999 to 2003, but financial support and student loan information is only available for 1999, 2001, and 2003. Thus, only the years 1999, 2001, and 2003 are examined here.

Our study's unit of analysis was individual full-time university students for each year of the survey. Only full-time students were included, for two reasons: first, full-time students' motivations for and patterns of labour market participation differ from those of part-time students; second, tuition fees, potentially

an important explanatory variable, could not easily be assigned to a part-time student. Our analysis involved a total of 8,490 student observations – 3,852 from cycle 1; 2,980 from cycle 2; and 1,658 from cycle 3.

Individual students were asked, for each month, whether they were a student at a full-time post-secondary institution. Combining this information with the institution type (i.e., university or college), their monthly full-time university participation status was derivable. Specifically, the whole year was divided into three semesters: Winter (January–April), Summer (May–August), and Fall (September–December). For each semester, any students who were registered for at least three months were included in the sample for analysis. Although YITS provided information on up to four institutions for each observation, only the university in which students had been most recently enrolled was considered in our study.

YITS also provided information on the monthly work status of each survey participant. All individuals were asked, first, whether they had a paid job during each month and, then, how many hours, on average, they worked per month. Based on this data, we generated a yearly working-hour variable, defined as the product of total months worked and the average monthly working hours. YITS collected information on up to seven jobs for each person. In estimating the working decisions of each individual, we summed up the working hours for all jobs and used that as our dependent variable.⁴

Working hours for university students were restricted to non-negative values. Since we could only observe either positive or zero hours for each student, working hours were characterized as a censored variable and a Tobit model was used to analyze this information. We also generated a binary variable to indicate each student's participation decision. If the student had positive working hours, we assigned this variable a value of 1; otherwise, a value of 0 was assigned. This dependent variable was used in the Probit regressions. We used the same explanatory variables for both the Probit and the Tobit models; these variables are outlined in the next section.⁵

Table 1 lists the mean and the standard deviation of the employment variables. In terms of total working hours, students worked an average of 848.05 hours, with a standard deviation of 667.91 hours. Male students worked longer hours (870.37 hours) than female students (831.46 hours), but female students (76%) were more likely to participate in the labour market than male students (70%).

EXPLANATORY VARIABLES

Tuition fee information was drawn from the Survey of Tuition and Living Accommodation Costs for Full-time Students at Canadian Degree-granting Universities. This survey contains tuition fee information for 63 universities, as well as for up to 13 major fields of study (Agriculture, Architecture, Arts, Commerce, Dentistry, Education, Engineering, Household Science, Law, Medicine, Music, Science and Graduate Studies) for each university. This data, in combination with a four-digit university code and a three-digit program code⁶

Table 1
Summary Statistics (NOB = 8,490)

Variable	Mean	STD
Total working hours	848.05	667.91
Total working hours female	831.46	623.46
Total working hours male	870.37	669.82
Participation rate	0.74	0.44
Participation rate female	0.76	0.48
Participation rate male	0.70	0.36
Tuition	3,094.98	1,486.87
Unemployment rate	7.04	1.64
Live away1	0.02	0.14
Live away2	0.31	0.46
Co-op	0.21	0.41
Education year	2.48	1.14
Total semester	1.88	0.56
Children	0.01	0.08
Female	0.56	0.50
Family financial support	2,353.38	3,693.92
Scholarships	688.68	1,582.66
Cumulated student loans	3,689.56	
NonGrad	0.04	0.19
Grad	0.17	0.37
Somepostsec	0.06	0.25
PostsecDiploma	0.23	0.42
Degree	0.50	0.50
Major field of studies dummies	Included	
CMA dummies	Included	
Cycle/year dummies	Included	

for each student found in YITS, allowed us to assign a tuition fee amount to each observation, based on the university attended and the major field of study for each semester.⁷ We then calculated tuition fees paid in real terms by using a weighted average consumer price index from each province (1992 = 100). Because universities typically charge different tuition fees for different programs, 1,140 different tuition fee amounts were used.⁸ The mean and standard deviation of tuition fees are listed in Table 1, along with other explanatory variables. Tuition fees had a mean of \$3,094.98 and a standard deviation of \$1,486.87, and they followed an upward trend throughout the sample period: in 1999, students paid an average of \$2,540.11; in 2001, an average of \$3,336.18; and in 2003, an average of \$3,514.71.

Because YITS includes information on university and campus locations, the local unemployment rate for the economic region, based on the Census

Metropolitan Area (CMA) where the campus is located, could be used. During the sampling period, the average local unemployment rate remained around 7% but varied greatly from region to region, ranging from a maximum of 19.7% in one region to a minimum of 3.7% in another.

YITS asked students whether their decision to move out of their family home was related to their decision to attend a post-secondary institution. We used two dummy variables to capture their location choice. Live away1 was given a value of 1 if the student moved away from home but remained within the same city; Live away2 was defined as 1 if the student moved out of their hometown to pursue their education. About 2% of students moved out of their family home but not to another city, while 31% of students moved to another city to attend university.

For students enrolled in a co-op program, their total working hours had the potential to affect their labour supply decisions. In our sample, about 21% of students had been enrolled in a co-op program for some period of time,⁹ most of them registered in either Arts, Medicine, Engineering, Education, or Commerce.

In terms of family characteristics, only 0.6% of students in our sample had children and 56.0% of the students were female. Of the female students, only about 0.4% were parents.

As discussed in Keane and Wolpin (2001),¹⁰ parental transfers are an important consideration in a student's educational attainment. Past studies have often included parents' education levels as a measure of family background. In our study, the following dummy variables captured the highest educational attainment of the parent or guardian ("family head"). NonGrad, which represented the omitted category, equalled 1 if the family head had not completed high school; otherwise, it equalled 0. Grad equalled 1 if the family head had completed high school but had no further education; otherwise, it equalled 0. Somepostsec equalled 1 if the family head had some post-secondary education but no certificate, diploma, or degree; otherwise, it equalled 0. PostsecDiploma equalled 1 if the family head had attended a post-secondary institution and had received a certificate but no degree; otherwise, it equalled 0. Degree equalled 1 if the family head had a university degree; otherwise, it equalled 0. In our sample, 50% of family heads had a university degree.

YITS also asked students about the total accumulated student loans they had borrowed to fund their post-secondary studies. This loan information, along with data on years enrolled in university, was used to evaluate how students' loan levels affected their working decisions. In our sample, students on average borrowed \$3,689.56 in student loans to support their post-secondary education. Furthermore, students on average received \$688.68 in scholarships. Both the student loan and scholarship variables were deflated by the major city CPI (1992 = 100) to make them represent real measurements.

Since we only had information on students' cumulative student loans during the survey period, it was important to control for the time that students had spent in school. Our analysis included both years of enrolment and the total

number of semesters attended in the reference year. The mean of years of enrolment was 2.48, with a standard deviation of 1.14, and, on average, a student attended 1.88 semesters during a calendar year, with a standard deviation of 0.56. Finally, we included dummy variables to control for the major field of study and for regional and cycle effects.¹¹

ESTIMATION RESULTS

Descriptive Statistics

Figure 1 shows the frequency distribution of total working hours for all of our student observations.¹² The 28% of students who did not participate in the labour market had their working hours set at 0. Of the students who did engage in labour market activities, the majority of them worked between 600 and 800 hours per academic year. The shape of the distribution for those who worked was close to normal, with a mean of around 1,000 hours per year. Very few students worked more than 25 hours per week (the equivalent of 1,300 hours per year).

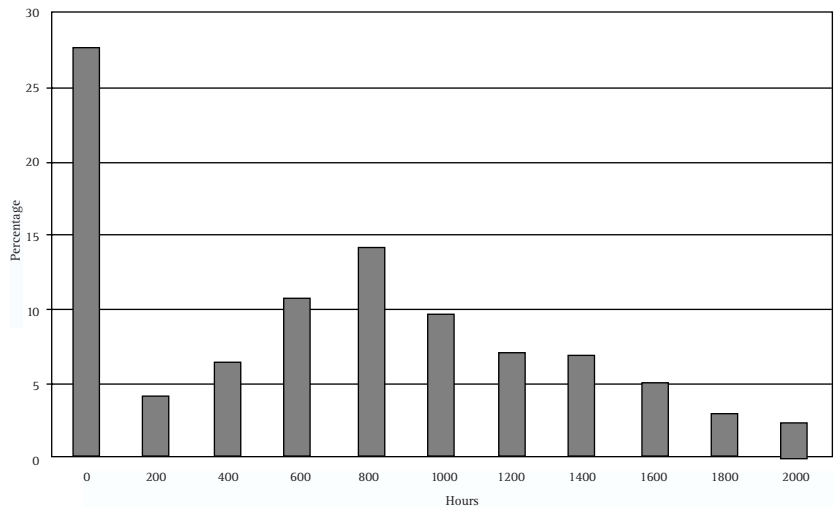


Figure 1. *Frequency distribution of total working hours*

The types of jobs that students chose to accept and how much money they were offered for each job were also examined. Students frequently changed jobs and occupations, and their job duration was short and largely influenced by their school arrangements. Figure 2 shows a weighted frequency distribution of student occupations and their hourly pay; it is weighted by the number of students in each category. Most of the students (close to 50%) worked in sales and service industries, earning an average of around \$7 an hour. There was a small amount of deviation in terms of the hourly wage across different occupations. The best-paid jobs were in the natural and applied sciences – 20% of the students worked in this sector, earning an average of slightly more than \$10 an hour.

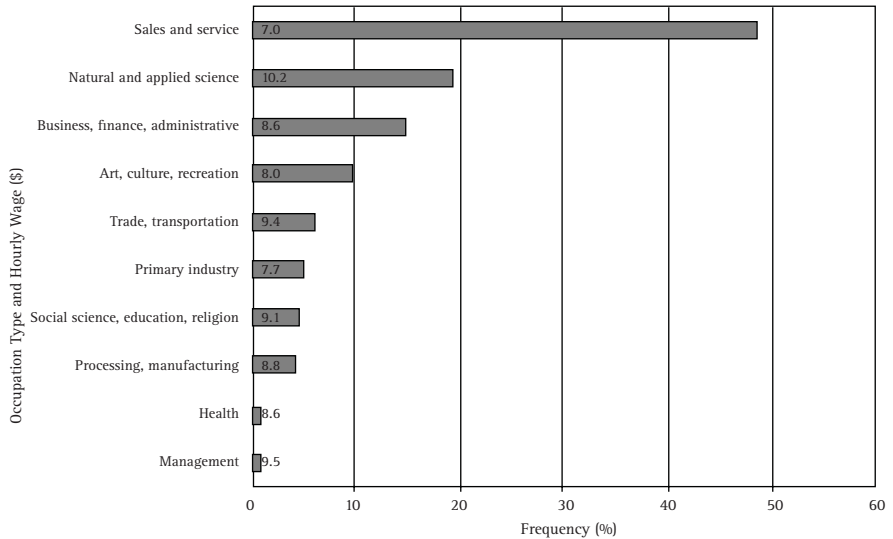


Figure 2. *Student job by occupation*

The relationship between tuition fees and employment is further demonstrated in Table 2, which shows the sample mean of total working hours, the participation rate, and the correlation with tuition fees for the whole calendar year, the in-school period, and the summer period. Students worked almost 56 hours longer and participated 34% more over the summer period. The correlation between total working hours and tuition fees was around 0.16 for the calendar year; however, it was much stronger in the summer period (0.21) than during the in-school period (0.04). Similarly, the correlation between the participation rate and tuition fees was around 0.09 for the calendar year and stronger in the summer period (0.12) than during the in-school period (0.02).

Table 2
Tuition Fee and Employment Correlation

	Mean of total work hours	Correlation with tuition fee	Mean of participation	Correlation with tuition fee
Calendar year	848.05	0.16	0.74	0.09
In-school period	396.12	0.04	0.56	0.02
Summer period	451.93	0.21	0.90	0.12

Regression Results for the Calendar Year

The Tobit and Probit regression results from YITS are reported in Table 3. Since the coefficient estimates from a Tobit/Probit regression cannot be directly interpreted, only marginal effect estimates and standard errors are reported here.

Column 2 of Table 3 presents the Tobit estimates for the calendar year. The coefficient in front of the tuition fees variable is positive and statistically significant. The square of tuition fees was included as an additional variable. The negative coefficient shows that the influence of tuition fees on total working hours is generally concave,¹³ which suggests that higher tuition fees will force students to work more. More specifically, an increase of \$1,000 in tuition fees from its mean value of \$3,094.98 to \$4,094.98 will induce students to work about 38 hours more each year.

The effect of the local unemployment rate was negative and statistically significant, indicating that a high unemployment rate discouraged working hours in general. In terms of campus location, the annual total working hours for students who had either moved away from the parental home but remained within the same city or moved out of their hometown were not significantly different from those living with their parents. In terms of gender differences, female students and female students with children had fewer working hours. The co-op and the years-of-education variables were insignificant. The number of semesters attended during the calendar year had significantly positive effects on working hours.

All of the parental education coefficients were positive and statistically significant. Given that the omitted class was parents without a high school diploma, the results demonstrated that better-educated parents may influence their children to work more. In terms of financial aid variables, scholarships were negative but insignificant, while cumulative student loans had a negative but significant effect. More specifically, all else being equal, a \$10,000 increase in cumulative student loans from its mean value would reduce annual working time by almost 16 hours. The results of dummy variables for programs of study, location, and cycle effect are not reported here, since most of these variables were not significant.¹⁴

Probit regression results differed little from the Tobit regression results, with a few exceptions. Tuition fees played an important role in determining the working decision of a university student. Factors such as unemployment rate, campus location, co-op status, parental education, years of education, and total semesters attended as of the reference year all had similar impacts to those of the Tobit model. However, the gender variable sign was flipped; that is, although male students worked more hours, female students were more likely to participate in labour market activities while attending university. This finding was consistent with the finding reported in Table 1. As compared with the Tobit result, the cumulative student loans variable became insignificant and the scholarship variable had a negative and significant sign, which indicated that scholarships may not affect a student's working hours but do affect participation decisions.

Table 3
Marginal Effect (M.E.) Estimation of Working Decisions for Full-time University Students

Variable	Calendar year			In-school period		
	Tobit		Probit	Tobit		Probit
	M.E.	S.E.	M.E.	S.E.	M.E.	S.E.
Constant	145.8468*	73.0322	0.8802*	0.1995	-206.7586*	59.8106
Tuition	0.0911*	0.0237	0.0002*	0.0001	0.0112	0.0190
Tuition2	-7.3E-06*	1.9E-06	-1.6E-08*	4.5E-09	-1.2E-06	1.5E-06
Unemployment rate	-7.8928*	3.7619	0.0103	0.0111	-7.1824*	3.0735
Live away1	55.0952	51.9828	0.1616	0.1671	-15.5829	41.9982
Live away2	1.8460	17.4484	0.0077	0.0503	-141.2040*	14.2845
Co-op	23.9382	21.2391	-0.0158*	0.0576	27.4257*	17.0749
Children	106.3196	151.5691	-0.2490	0.3653	5.2112	123.5367
Female	-50.2394*	16.0638	0.0796*	0.0462	-2.7906	13.0575
Female with children	-440.3168*	191.2880	-0.5262	0.4345	-163.4682*	156.2709
Grad	107.1784*	40.5421	0.3448*	0.1005	71.1603*	33.1686
Somepostsec	93.3518*	47.6349	0.3265*	0.1227	58.2058*	38.8336
PostsecDiploma	140.4303*	39.8345	0.4743*	0.0998	77.6629*	32.5916
Degree	94.7649*	38.7729	0.3771*	0.0949	44.3038*	31.7464
Scholarship	-0.0197	0.0050	-3.1E-05*	1.2E-05	-0.0197*	0.0043
Cumulated student loans	-0.0016*	0.0007	-2.3E-06	1.4E-06	-0.0010*	0.0005
Education year	-2.1847	35.0990	0.1600	0.0973	-47.2134*	28.2956
Education year2	2.3255	6.1652	-0.0141	0.0170	6.3784	4.9587
Number of semesters attended	182.5683*	25.7648	0.3047*	0.0669	260.1097*	20.7185
Log likelihood	-60633.8040		-2051.6979		-47941.8140	
						-4278.6548

Note: Variable estimation with * indicates significance at 5% level

Separating the In-school Period from the Summer Period

On average, students registered for about two semesters per year (see Table 1), and student employment followed a significant seasonal pattern (see Table 2). To further investigate this issue, we determined the total working hours for the periods when individual students were registered and studying at a university by combining the monthly university participation status and work status of each student. The estimation results of the Tobit and Probit regressions for students' working decisions during the in-school period only are presented in the last two columns of Table 3.

When the analysis was limited to only those periods in which individual students were registered in a university, tuition fees no longer had a significant impact on working hours. The corresponding influence of tuition fee increases on the probability of labour force participation was also statistically insignificant. The positive relationship we observed between tuition fees and annual total working hours when all periods were considered suggested that higher tuition fees tended to push students to work harder in the summer to make up for increased costs during in-school periods.

Besides tuition fees, only two other variables – location and co-op – produced different results from our previous estimations. Students worked fewer hours during the in-school period if they had moved away from their hometown to attend university, possibly because they had fewer work-related connections or networks when they were away from home. Co-op students worked more than regular full-time students during this period because their co-op term generally occurred during that period.¹⁵

To further test our findings, we ran regressions that only included the summer period. In these cases, we used the tuition fee for the upcoming Fall semester to examine whether students worked longer over the summer when they were expecting a tuition fee increase in their next school year. Since the results of these regressions were very similar to the results reported in column 2 and 3 of Table 3, we have not reported all of the estimates here. The tuition fee variable was statistically significant in the Tobit equation, with a marginal effect of 0.0847, while the squared term of this variable, also significant, had a marginal effect of $-6.7\text{e-}06$. More specifically, an increase of \$1,000 in tuition fees from its mean value (\$3,094.98) would cause students to work 36.36 hours more during the summer. In the Probit equation, both tuition fee variables were significant, as well; the marginal effects were 0.0002 and $-1.60\text{e-}08$, respectively.

CONCLUSIONS

Generally speaking, tuition fees positively affected both the total number of annual paid hours worked by university students and the probability of their labour force participation. Parental education, the local unemployment rate, and financial aid also had an important effect on working decisions. Students with better-educated parents worked more hours and participated more. High-

er unemployment rates discouraged work, in general, and students with more scholarships and more accumulated student loans were less likely to participate. When they did participate, they worked fewer hours. Closer examination of their working decision revealed that students might change their working behaviour during in-school periods, as compared to summer periods. They participated more and worked more hours over the summer when their time was more flexible.

We found that students seemed to trade work during their in-school periods for work during the summer seasons across different tuition levels. Three aspects of this finding are particularly interesting. First, if students participated more and worked more in summer periods than during in-school periods due to higher tuition fees, the effect on their educational experience during their in-school period was less and their success in university (persistence) did not seem to be compromised. Second, the tuition fee effect (even though it was only significant for the summer periods) that we observed when we controlled for students' financial resources may indicate inefficiency in the credit market. An increase in tuition should not have a large effect even on summer working hours, since it would be more efficient for students to borrow additional funds during the year and pay back their loans after graduation (when they had at least the expectation of a much higher-paying job). Based on our results, increases in tuition fees were at least partially compensated for by a greater work effort. Third, students' in-school labour market activities were unlikely to be related to their program choice since most students worked in service industries. Working in the summer may have other costs: students have less time to rest or to devote to hobbies and other interests.

With the release of cycle 4 of YITS, our research could be expanded in the future to include the long-term effect on graduating students and their labour market experience after graduation. 🍁

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NOTES

1. Neill used a micro data file from the monthly Labour Force Survey; the survey contains students' monthly labour market status but no detailed information on post-secondary enrolment, such as institution attended or program of study. The result reported in her article is based on survey data drawn from the month of December.
2. Examples can be found in Paul (1982); Hood, Craig, and Ferguson (1992); Ehrenberg and Sherman (1987); Stinebrickner and Stinebrickner (2003); and Ruhm (1997).
3. For detailed information, see <http://www.statcan.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=4435&lang=en&db=IMDB&dbg=f&adm=8&dis=2>
4. For example, a hypothetical student works from May to August at two jobs – 50 hours per month on average for the first job and 40 hours per month on average for the second job. With this information, total working hours can be calculated as 4 months \times 50 hours (job 1) + 4 months \times 40 hours (job 2) = 360 hours.
5. Christofides and Stark (1996) illustrated that the Tobit model can simultaneously address whether someone works and how many hours they work, but those detailed decompositions would add little to this analysis. The Tobit model was a better fit for our data, compared to the alternative specifications of Probit and Truncated regressions (a likelihood ratio test produced a χ^2 value of 59.18, which is below the critical value of 61.66). As well, since the alternative specifications would have complicated the current article unnecessarily and added little additional information, we opted to use the Probit model to deal with the participation decision and the Tobit model for the extent-of-work variable.
6. We combined different programs into 13 major fields of study to match the tuition fee information available in the survey.

7. A calendar year and a school year are different. A typical student may work from January to December but only register for the Fall and Winter semester. Thus, for example, to calculate tuition fees paid in the cycle 1 (1999) Fall semester, we used tuition fees paid in the 1999–2000 school year divided by 2; for the Winter semester of 1999, we used tuition fees paid in the 1998–1999 school year divided by 2. If a student registered for the Summer semester, we used the same tuition fee as for the Winter semester.
8. The tuition fee variable used in this study is not clustered around any specific year, province, or program. A histogram of the tuition fee variable is available upon request.
9. From our data, we could tell if a student had enrolled in a co-op program but not which term was their co-op term.
10. The U.S. National Centre for Education Statistics's 1994 statistical analysis report showed that financial aid can have a negative effect on the work intensity of university students.
11. Because we dealt with longitudinal data, the different cycle/year of the survey may have influenced our results. Thus, we specified three dummy variables to indicate which cycle/year the observation came from.
12. Because YITS may have had some recording errors, a few outliers were excluded. For example, one observation had 6,345 working hours, which meant that this student had worked an average of 17.4 hours per day for 365 days, a very unlikely scenario for any individual let alone a full-time student.
13. The tuition fee effect reached a maximum at \$12,636.83. Since some professional programs are deregulated and subject to much higher fees, students who were enrolled in such a program simply increased their use of credit and may even have reduced their working hours. The non-linear relationship of tuition fees and hours worked reflected this probability.
14. It was important to control for program of study and regional effects to address possible fixed effects. One concern was that, since tuition levels in the data set were directly related to program of study, the coefficient on tuition fees may have picked up some of the program effect. To further test the robustness of our results, we took the first differences of our variables and ran a linear regression; our results showed that tuition fees had very similar effects as in Tobit and that our findings were quite consistent. The results from linear regression are available upon request.
15. We ran regressions without co-op students, and the general results were unchanged.